

## **Supplemental Material**

### **The Organochlorine o,p'-DDT Plays a Role in Coactivator-Mediated MAPK Crosstalk in MCF-7 Breast Cancer Cells**

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**Supplemental Material, Table S1.** qPCR array of MCF-7F cells.

Gene symbol	Description	Fold Regulation (DDT/Veh)	p value
<i>AR</i>	Androgen receptor	-9.0317	0.440419
<i>BAD</i>	BCL2-associated agonist of cell death	-15.366	0.208434
<i>BAG1</i>	BCL2-associated athanogene	-15.7251	0.253679
<i>BCL2</i>	B-cell CLL/lymphoma 2	-1.3582	0.03829
<i>BCL2L2</i>	BCL2-like 2	1.1961	0.052241
<i>C3</i>	Complement component 3	-1.1554	0.782079
<i>CCNA1</i>	Cyclin A1	1.0413	0.542735
<i>CCNA2</i>	Cyclin A2	-1.4557	0.011769
<i>CCND1</i>	Cyclin D1	-1.0058	0.972787
<i>CCNE1</i>	Cyclin E1	-1.21	0.23968
<i>CD44</i>	CD44 molecule (Indian blood group)	1.5422	0.002891
<i>CDH1</i>	Cadherin 1, type 1, E-cadherin (epithelial)	-1.21	0.205846
<i>CDKN1A</i>	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)	-2.5344	0.90007
<i>CDKN1B</i>	Cyclin-dependent kinase inhibitor 1B (p27, Kip1)	-1.4557	0.00237
<i>CDKN2A</i>	Cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)	-1.5245	0.109123
<i>CLDN7</i>	Claudin 7	-1.5966	0.002555
<i>CLU</i>	Clusterin	-2.9113	0.021252
<i>COL6A1</i>	Collagen, type VI, alpha 1	1.0175	0.806653
<i>CTNNB1</i>	Catenin (cadherin-associated protein), beta 1, 88kDa	-1.5601	0.004348
<i>CTSB</i>	Cathepsin B	-1.078	0.437803
<i>CTSD</i>	Cathepsin D	-1.21	0.063807
<i>CYP19A1</i>	Cytochrome P450, family 19, subfamily A, polypeptide 1	1.2241	0.862951
<i>DLC1</i>	Deleted in liver cancer 1	-2.8448	0.010782
<i>EGFR</i>	Epidermal growth factor receptor	-1.5245	0.004899
<i>ERBB2</i>	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)	-9.9062	0.070662
<i>ESR1</i>	Estrogen receptor 1	-9.0317	0.122889
<i>ESR2</i>	Estrogen receptor 2 (ER beta)	-1.2672	0.401208
<i>FAS</i>	Fas (TNF receptor superfamily, member 6)	-1.129	0.09034
<i>FASLG</i>	Fas ligand (TNF superfamily, member 6)	-1.6339	0.066675
<i>FGF1</i>	Fibroblast growth factor 1 (acidic)	1.4061	0.291349
<i>FLRT1</i>	Fibronectin leucine rich transmembrane protein 1	-1.0058	0.986079
<i>FOSL1</i>	FOS-like antigen 1	1.4726	0.009182

Supplemental Material, Table S1 (cont.)

<i>GABRP</i>	Gamma-aminobutyric acid (GABA) A receptor, pi	-3.1932	0.003233
<i>GATA3</i>	GATA binding protein 3	-1.4557	0.00488
<i>GNAS</i>	GNAS complex locus	-3.1932	0.002396
<i>GSN</i>	Gelsolin	-1.078	0.416832
<i>HMGB1</i>	High mobility group box 1	2.7479	0.7239
<i>HSPB1</i>	Heat shock 27kDa protein 1	-68.9909	0.416565
<i>ID2</i>	Inhibitor of DNA binding 2, dominant negative helix-loop-helix protein	-1.3272	0.077236
<i>IGFBP2</i>	Insulin-like growth factor binding protein 2, 36kDa	-1.7921	0.016659
<i>IL2RA</i>	Interleukin 2 receptor, alpha	1.116	0.50141
<i>IL6</i>	Interleukin 6 (interferon, beta 2)	1.374	0.053573
<i>IL6R</i>	Interleukin 6 receptor	1.4726	0.041435
<i>IL6ST</i>	Interleukin 6 signal transducer (gp130, oncostatin M receptor)	-1.129	0.097104
<i>ITGA6</i>	Integrin, alpha 6	1.4061	0.000454
<i>ITGB4</i>	Integrin, beta 4	-1.834	0.004426
<i>JUN</i>	Jun proto-oncogene	-1.4557	0.056947
<i>KIT</i>	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog	-1.6339	0.066675
<i>KLF5</i>	Kruppel-like factor 5 (intestinal)	1.0413	0.840779
<i>KLK5</i>	Kallikrein-related peptidase 5	-1.6339	0.002613
<i>KRT18</i>	Keratin 18	-1.6339	0.000497
<i>KRT19</i>	Keratin 19	-1.1554	0.082243
<i>MAP2K7</i>	Mitogen-activated protein kinase kinase 7	-1.1824	0.380596
<i>MKI67</i>	Antigen identified by monoclonal antibody Ki-67	-39.6248	0.06399
<i>MT3</i>	Metallothionein 3	-1.6339	0.066675
<i>MUC1</i>	Mucin 1, cell surface associated	-1.4897	0.014666
<i>NFYB</i>	Nuclear transcription factor Y, beta	-1.3272	0.000844
<i>NGF</i>	Nerve growth factor (beta polypeptide)	-1.6339	0.066675
<i>NGFR</i>	Nerve growth factor receptor	-2.7798	0.000196
<i>NME1</i>	Non-metastatic cells 1, protein (NM23A) expressed in	1.0905	0.235201
<i>PAPPA</i>	Pregnancy-associated plasma protein A, pappalysin 1	-1.6339	0.066675
<i>PGR</i>	Progesterone receptor	-1.6339	0.066675
<i>PLAU</i>	Plasminogen activator, urokinase	-1.129	0.425072
<i>PTEN</i>	Phosphatase and tensin homolog	-1.0534	0.264509

Supplemental Material, Table S1 (cont.)

<i>PTGS2</i>	Prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)	-1.6339	0.066675
<i>RAC2</i>	Ras-related C3 botulinum toxin substrate 2 (rho family, small GTP binding protein Rac2)	-1.6339	0.066675
<i>RPL27</i>	Ribosomal protein L27	1.2527	0.067928
<i>SCGB1D2</i>	Secretoglobin, family 1D, member 2	-1.078	0.618955
<i>SCGB2A1</i>	Secretoglobin, family 2A, member 1	1.6915	0.113076
<i>SERPINA3</i>	Serpin peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 3	1.3119	0.061166
<i>SERPINB5</i>	Serpin peptidase inhibitor, clade B (ovalbumin), member 5	1.2241	0.157399
<i>SERPINE1</i>	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1	1.2819	0.040936
<i>SLC7A5</i>	Solute carrier family 7 (amino acid transporter light chain, L system), member 5	1.2819	0.191025
<i>SPRR1B</i>	Small proline-rich protein 1B	-4.9531	0.730958
<i>STC2</i>	Stanniocalcin 2	1.8129	0.001576
<i>TFI1</i>	Trefoil factor 1	1.4389	0.010301
<i>TGFA</i>	Transforming growth factor, alpha	-1.1554	0.340467
<i>THBS1</i>	Thrombospondin 1	-1.1554	0.122357
<i>THBS2</i>	Thrombospondin 2	-1.3272	0.025363
<i>TIE1</i>	Tyrosine kinase with immunoglobulin-like and EGF-like domains 1	-1.5245	0.089397
<i>TNFAIP2</i>	Tumor necrosis factor, alpha-induced protein 2	-1.5966	0.018487
<i>TOP2A</i>	Topoisomerase (DNA) II alpha 170kDa	-1.4224	0.00628
<i>TP53</i>	Tumor protein p53	-1.3899	0.058272
<i>VEGFA</i>	Vascular endothelial growth factor A	1.2241	0.041647
<i>B2M</i>	Beta-2-microglobulin	127.2628	0.667939

**Supplemental Material, Table S1. qPCR array analysis of MCF-7F cells.** qPCR arrays of MCF-7F cells treated with either vehicle or 10µM DDT were run on samples isolated from three independent experiments using triplicate Breast Cancer & Estrogen Signaling PCR Arrays.

**Supplemental Material, Table S2.** qPCR array of MCF-7 cells.

Gene symbol	Description	Fold Regulation (DDT/Veh)	p value	Fold Regulation (E <sub>2</sub> /Veh)	p value
<i>AR</i>	Androgen receptor	0.73	0.0285	0.70	0.0261
<i>BAD</i>	BCL2-associated agonist of cell death	1.06	0.8421	0.79	0.4956
<i>BAG1</i>	BCL2-associated athanogene	0.59	0.1056	0.52	0.0207
<i>BCL2</i>	B-cell CLL/lymphoma 2	3.00	0.0011	2.65	0.0006
<i>BCL2L2</i>	BCL2-like 2	1.22	0.4896	1.10	0.7312
<i>C3</i>	Complement component 3	0.81	0.6753	0.55	0.1100
<i>CCNA1</i>	Cyclin A1	1.97	0.0444	1.94	0.0057
<i>CCNA2</i>	Cyclin A2	1.28	0.1708	1.41	0.0085
<i>CCND1</i>	Cyclin D1	2.28	0.0656	1.16	0.7079
<i>CCNE1</i>	Cyclin E1	0.81	0.2212	0.81	0.2008
<i>CD44</i>	CD44 molecule (Indian blood group)	1.57	0.0736	1.55	0.0529
<i>CDH1</i>	Cadherin 1, type 1, E-cadherin (epithelial)	0.76	0.0010	0.78	0.0179
<i>CDKN1A</i>	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)	0.69	0.2083	0.91	0.6773
<i>CDKN1B</i>	Cyclin-dependent kinase inhibitor 1B (p27, Kip1)	1.01	0.9595	0.88	0.6278
<i>CDKN2A</i>	Cyclin-dependent kinase inhibitor 2A (melanoma, p16, inhibits CDK4)	1.51	0.6186	0.82	0.4367
<i>CLDN7</i>	Claudin 7	1.23	0.4211	0.97	0.9236
<i>CLU</i>	Clusterin	0.21	0.0001	0.11	0.0000
<i>COL6A1</i>	Collagen, type VI, alpha 1	0.68	0.0833	0.46	0.0008
<i>CTNNB1</i>	Catenin (cadherin-associated protein), beta 1, 88kDa	0.80	0.3459	0.70	0.1403
<i>CTSB</i>	Cathepsin B	0.63	0.1371	0.60	0.0041
<i>CTSD</i>	Cathepsin D	2.96	0.0228	2.64	0.0431
<i>CYP19A1</i>	Cytochrome P450, family 19, subfamily A, polypeptide 1	1.59	0.3552	1.15	0.7322
<i>DLC1</i>	Deleted in liver cancer 1	0.85	0.4211	0.62	0.0170
<i>EGFR</i>	Epidermal growth factor receptor	0.46	0.0146	0.45	0.0060
<i>ERBB2</i>	V-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog (avian)	0.46	0.0294	0.33	0.0061
<i>ESR1</i>	Estrogen receptor 1	0.71	0.2677	0.49	0.0406
<i>ESR2</i>	Estrogen receptor 2 (ER beta)	0.87	0.4867	0.68	0.0994
<i>FAS</i>	Fas (TNF receptor superfamily, member 6)	1.35	0.1461	1.15	0.4104
<i>FASLG</i>	Fas ligand (TNF superfamily, member 6)	2.61	0.0156	0.98	0.9500
<i>FGF1</i>	Fibroblast growth factor 1 (acidic)	0.64	0.0916	0.40	0.0032
<i>FLRT1</i>	Fibronectin leucine rich transmembrane protein 1	1.38	0.5102	0.94	0.8911
<i>FOSL1</i>	FOS-like antigen 1	2.81	0.0002	2.72	0.0000
<i>GABRP</i>	Gamma-aminobutyric acid (GABA) A receptor, pi	0.16	0.0152	0.10	0.0001

Supplemental Material, Table S2 (cont.)

<i>GATA3</i>	GATA binding protein 3	1.01	0.9697	0.79	0.4808
<i>GNAS</i>	GNAS complex locus	0.61	0.1166	0.56	0.0360
<i>GSN</i>	Gelsolin	0.36	0.0008	0.38	0.0003
<i>HMGB1</i>	High mobility group box 1	1.70	0.0172	1.44	0.0013
<i>HSPB1</i>	Heat shock 27kDa protein 1	0.87	0.4067	0.99	0.9174
<i>ID2</i>	Inhibitor of DNA binding 2, dominant negative helix-loop-helix protein	0.87	0.5347	0.79	0.1426
<i>IGFBP2</i>	Insulin-like growth factor binding protein 2, 36kDa	0.80	0.6142	0.78	0.5921
<i>IL2RA</i>	Interleukin 2 receptor, alpha	0.79	0.4674	1.01	0.9635
<i>IL6</i>	Interleukin 6 (interferon, beta 2)	0.54	0.0456	0.72	0.1373
<i>IL6R</i>	Interleukin 6 receptor	2.11	0.0161	1.70	0.0548
<i>IL6ST</i>	Interleukin 6 signal transducer (gp130, oncostatin M receptor)	1.06	0.7558	0.83	0.3089
<i>ITGA6</i>	Integrin, alpha 6	2.28	0.0376	1.47	0.1152
<i>ITGB4</i>	Integrin, beta 4	0.52	0.0346	0.45	0.0138
<i>JUN</i>	Jun proto-oncogene	1.23	0.6386	1.02	0.9488
<i>KIT</i>	V-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog	0.73	0.4273	0.82	0.4367
<i>KLF5</i>	Kruppel-like factor 5 (intestinal)	0.58	0.0120	0.46	0.0012
<i>KLK5</i>	Kallikrein-related peptidase 5	0.60	0.4859	0.83	0.6677
<i>KRT18</i>	Keratin 18	0.44	0.0176	0.42	0.0027
<i>KRT19</i>	Keratin 19	0.98	0.8705	1.19	0.2614
<i>MAP2K7</i>	Mitogen-activated protein kinase kinase 7	1.43	0.3934	0.78	0.5801
<i>MKI67</i>	Antigen identified by monoclonal antibody Ki-67	1.09	0.7367	1.07	0.7722
<i>MT3</i>	Metallothionein 3	1.16	0.7076	0.91	0.7190
<i>MUC1</i>	Mucin 1, cell surface associated	0.58	0.0901	0.44	0.0202
<i>NFYB</i>	Nuclear transcription factor Y, beta	0.77	0.2585	0.69	0.0027
<i>NGF</i>	Nerve growth factor (beta polypeptide)	0.63	0.1830	0.82	0.4367
<i>NGFR</i>	Nerve growth factor receptor	1.49	0.0486	1.33	0.2321
<i>NME1</i>	Non-metastatic cells 1, protein (NM23A) expressed in	2.46	0.0006	2.96	0.0000
<i>PAPPA</i>	Pregnancy-associated plasma protein A, pappalysin 1	0.56	0.0647	0.72	0.1744
<i>PGR</i>	Progesterone receptor	229.01	0.0000	152.01	0.0000
<i>PLAU</i>	Plasminogen activator, urokinase	0.32	0.0017	0.29	0.0003
<i>PTEN</i>	Phosphatase and tensin homolog	0.86	0.2443	0.86	0.1711
<i>PTGS2</i>	Prostaglandin-endoperoxide synthase 2 (prostaglandin G/H synthase and cyclooxygenase)	2.38	0.4210	0.82	0.4367

**Supplemental Material, Table S2 (cont.)**

<i>RAC2</i>	Ras-related C3 botulinum toxin substrate 2 (rho family, small GTP binding protein Rac2)	3.21	0.1364	1.55	0.1196
<i>RPL27</i>	Ribosomal protein L27	1.06	0.8228	1.22	0.3457
<i>SCGB1D2</i>	Secretoglobin, family 1D, member 2	6.88	0.0035	2.43	0.0511
<i>SCGB2A1</i>	Secretoglobin, family 2A, member 1	1.36	0.3466	1.05	0.8463
<i>SERPINA3</i>	Serpin peptidase inhibitor, clade A (alpha- 1 antiproteinase, antitrypsin), member 3	2.72	0.0139	2.62	0.0042
<i>SERPINB5</i>	Serpin peptidase inhibitor, clade B (ovalbumin), member 5	4.70	0.0004	4.70	0.0004
<i>SERPINE1</i>	Serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1	0.35	0.0181	0.42	0.0139
<i>SLC7A5</i>	Solute carrier family 7 (amino acid transporter light chain, L system), member 5	13.72	0.0002	11.62	0.0003
<i>SPRR1B</i>	Small proline-rich protein 1B	1.24	0.6745	1.75	0.0664
<i>STC2</i>	Stanniocalcin 2	5.46	0.0001	3.94	0.0000
<i>TFF1</i>	Trefoil factor 1	23.30	0.0000	28.93	0.0000
<i>TGFA</i>	Transforming growth factor, alpha	1.09	0.6578	0.94	0.7549
<i>THBS1</i>	Thrombospondin 1	0.62	0.0277	0.80	0.1801
<i>THBS2</i>	Thrombospondin 2	0.78	0.2588	0.61	0.0165
<i>TIE1</i>	Tyrosine kinase with immunoglobulin-like and EGF-like domains 1	0.67	0.2734	0.82	0.4367
<i>TNFAIP2</i>	Tumor necrosis factor, alpha-induced protein 2	0.26	0.0021	0.23	0.0007
<i>TOP2A</i>	Topoisomerase (DNA) II alpha 170kDa	0.97	0.9093	0.91	0.6314
<i>TP53</i>	Tumor protein p53	0.90	0.5926	0.88	0.5090
<i>VEGFA</i>	Vascular endothelial growth factor A	1.97	0.0474	1.63	0.1023
<i>B2M</i>	Beta-2-microglobulin	1.02	0.8612	0.79	0.0374

**Supplemental Material, Table S2. qPCR array analysis of MCF-7 cells.** qPCR arrays of MCF-7 cells treated with either vehicle, 10µM DDT, or 1 nM E<sub>2</sub> were run on samples isolated from three independent experiments using triplicate Breast Cancer & Estrogen Signaling PCR Arrays.